

The American
Anti-Vivisection Society. 179.4
Am-3
1888/89

FORMERLY THE AMERICAN SOCIETY FOR THE RESTRICTION OF VIVISECTION.

SIXTH ANNUAL REPORT.

OFFICE, No. 1706 CHESTNUT STREET,
PHILADELPHIA.

1889.

SIXTH ANNUAL REPORT
OF THE
AMERICAN
ANTI-VIVISECTION SOCIETY.

FOR THE
YEAR ENDING JANUARY 28th, 1889.

Organized February 23d, 1883.

Incorporated May, 1883.

PHILADELPHIA :
1706 CHESTNUT STREET.
1889.

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SIXTH ANNUAL REPORT
OF THE
AMERICAN ANTI-VIVISECTION SOCIETY.

MADE ON JANUARY 28TH, 1889.

We have the honor to make the following report of the progress of the work of the Anti-Vivisection Society during the past year of 1888.

At our last annual meeting it was announced that during the year that had just gone by (1887) a great change had been determined on by the Society ; a change of purpose from restriction to abolition and a change of title to express its new object.

The name first chosen, "The American Anti-Vivisection Society," was resumed. It was defined originally to mean "for the restriction of vivisection within proper limits." Now it is defined "for the total abolition of all vivisectional experiments on animals, and other experiments of a painful character."

Early in 1888 the charter of the Society was amended. After making this change generally known, a letter was received from a physician of this city (a graduate of the University of Pennsylvania), who expressed his wish to become a member of the Society in consequence of its favoring abolition. Enclosing in his letter the fee for membership, he said "it is from a physician deeply interested in the abolition of vivisection. As an Association having for its object merely the restriction of the barbarity, I could not have become a member, but since you are making an effort to have it

"abolished altogether I will consider it a great honor to be
 "permitted to work with the Society in its effort to accom-
 "plish this. Respectfully,

[Signed]

"MATTHEW WOODS."

A hearing was lately gained for the subject of vivisection before a large and influential body of women associated under the name of the "Woman's Christian Temperance Union." One of its members, an earnest worker for the prevention of intemperance, who is equally interested in the prevention of cruelty, Mrs. Geo. S. Lovell, made an address at a meeting of the Temperance Union of Montgomery County, Penna. After urging the teaching of humane principles to the young, that "they should be kind to the weak, the aged, the unfortunate, to all God's creatures, human and dumb," Mrs. Lovell brought before her hearers the wrongs now suffered by those animals which are subjected to experiments for research. We may be sure that many of her audience heard for the first time of the existence of this cruel practice. This able paper has been printed, and will gain a wide circulation through the United States among the associates of the Temperance Union. It has already received the warm encomiums of our English colleagues.

It is not often that our English friends find cause to congratulate us. Indeed, our American journals of all kinds, medical and others, and even our daily papers, have conveyed to them so often the records of painful experiments performed in the United States, that America evidently seems to them the hotbed of this kind of cruelty. A justification for their opinion is found in the essays of Dr. Leffingwell, published in 1880 and 1884, in which he says, "I think it may safely be asserted that in the city of New York, in a single medical school, more pain is inflicted on living animals as a means of teaching well-known facts than is permitted to be done for the same purpose in all the medical schools of Great Britain and Ireland." He also speaks of an experiment which he

believed "the most ruthless experimenter dare not exhibit to "the young men of *England*, but which has been performed "publicly again and again in *American* medical colleges "without exciting," as far as he knows, "a whisper of protest." "Have we drifted backwards in humanity?" Dr. Leffingwell asks; "Have American students learned to witness without "protest tortures at the sight of which English students "would rebel?"

With such teachers as are here described, who have so dismissed all scruples of humanity, can we wonder if the younger generation in our country is gaining for us a lamentable notoriety for physiological cruelties?

We may be glad that the essay of Mrs. Lovell is bringing this subject to the notice of American women. Mothers might teach their children to detest the selfish system, before their judgments are warped by the ideas and examples found in universities and medical schools. Then the honest indignation of youth would sweep aside the sophistries of their preceptors when they tried to justify the cold-hearted abuse of power involved in vivisection,—the disgrace of Christian nations.

In regard to the work of the past year, it has consisted largely in the constant dissemination of facts concerning Vivisection. These facts are difficult to make known. They make the reader shudder, and the impulse to close the pages seems irresistible.

We must remind our friends that when we advanced to the higher ground of the abolition of this wrong, from our first position, the restriction of it, we of necessity changed our course of action, and we have not a second time sought redress by the enactment of laws. The principles we represent could hardly triumph so suddenly. In the Biography of the late Lord Ashley, the Earl of Shaftesbury, who was the first President of the English Anti-Vivisection Society, it is very strikingly shown that years of patient, persevering labor are required of those who would accomplish any great reform—such a reform as we are striving for.

The barbarities Lord Shaftesbury discovered to be in existence in England, in every direction, kept him at warfare during all his long life. The cruelties in lunatic asylums—the cruelties to children in factories, to women and children in mines and collieries, and in almost every kind of labor in which children were employed, were so great, they seem now incredible.

His biographer says, "As we turn to each phase of philanthropic labor in which the energies of Lord Ashley were engaged, we are constantly reminded of the hard battle that always has to be fought whenever the dictates of humanity come into conflict with the motives of self interest."

Also, "In the history of public opinion on great moral questions it is almost universally found that a long time elapses before the conscience of a nation is distinctly awakened to any evil that exists and in which it takes a part."

Again, "But what astonished him more than anything else was, that people knew and cared absolutely nothing about this state of things, and that it was with the greatest difficulty he could obtain from any outside source an opinion or a fact."

The machinery in factories was kept working day and night, one set of children working by day and another by night, while in time of pressure the same children were kept working day and night; in weariness they often fell upon the machinery, and almost every factory child was more or less injured. They were sent to the factories in Lancashire from London workhouses, and once there they could not escape; by hunger, neglect and over-fatigue they were swept off by contagious fevers. Lord Ashley's proposed reforms were opposed, not only by mill owners, but by many able and enlightened men who considered them as an interference with the relations of employer and employed, and with the disposal of capital.

When he tried to rescue the young children employed as sweeps, who were sometimes suffocated when forced up the

narrow chimneys then in use, who were taken at the age of seven, six and even five years—perhaps sold by their parents to inhuman masters—he was met with the objection that his bill would endanger the safety of the metropolis; and several insurance companies petitioned against it; and although it was passed by the Commons, in 1817, it was then thrown out by the House of Lords.

When at last the “Ten Hour bill” for factories was passed, it was after Lord Ashley had been working incessantly for it for fourteen years. His labors in almost every direction were eventually crowned with success; but the indifference he met with, the contradiction of the positive facts he set forth, and the formidable enemies of self interest and expediency that confronted him, make his experience seem parallel to our own. And if such insensibility to the sufferings of children and others was shown in this century in which we live, can we wonder if our own good cause makes but slow progress. No, we cannot wonder, but can find encouragement in Lord Shaftesbury’s long deferred but ultimate success.

Our attention was called last summer to cruel experiments performed on dogs by electricity, in New York. In this instance it was not a question between medical men who were at variance on the subject, but a question between electrical experts; and the experiments were permitted, strange to say, at the Columbia College School of Mines, by an electrical engineer. As he considered that he had proved his point, we might have hoped that this kind of cruelty would not be repeated. But the unnecessary repetition of the same experiments presents an instance of the total indifference to the infliction of severe pain upon animals which still prevails, when any motive at all exists for it.

When a vacancy occurred in the Board of Managers of the Society, in April last, as it was understood that Archbishop Ryan was favorable to the work of the Society, he was elected a member of the Board. On receiving information of it, he sent the following reply :

PHILADELPHIA, April 23d, 1888.

MY DEAR MRS. WHITE:—Whilst I fully sympathize with the object of the Anti-Vivisection Society, as did my predecessor, Archbishop Wood, I prefer not to be a member of the Board, as I have made a rule not to become a member of any Board in the transactions of which I have not time to take an active part. With sincere regard,

Yours respectfully,

P. J. RYAN, *Abp.*

Mrs. Richard P. White.

The Archbishop has since become an Honorary Member of the society.

During the past year, on March 12th, by the death of Mr. Henry Bergh our cause lost one of its earliest and most fearless advocates. For twenty-two years he had stood between the dumb creatures and their oppressors of all classes.

“And made the righting of their voiceless wrongs,
“His life work and his glory.”

“The warrior chief who wades through blood to fame
“May gather gory laurels round his name,—
“But this brave heart, unstained by vain ambition,
“Won loftier glory; all just souls will hold
“More dear than gems, more precious than fine gold,
“His memory and his mission.”

ELIZABETH AKERS.

As many friends of our cause have thought the course of this society in abandoning its purpose of restriction for that of abolition, was not a wise one, we append quotations from a new pamphlet lately received from England, entitled, “Twelve years’ trial of the Vivisection Act. Has it stopped “the scientific torture of animals in England? By M. R. C. S.” One of its closing sentences, goes far to justify our course. It is as follows: “I have shown how terribly the Act of Parliament which was intended to prevent scientific cruelty, has failed of its purpose, and that it is possible under its provisions to commit cruelties unsurpassed by those done in foreign countries.

ADELE BIDDLE, *Secretary.*

TREASURER'S ANNUAL REPORT.

Balance on hand February 1st, 1888..... \$1045 13

RECEIPTS.

Received for dues.....	\$295 00	
" donations.....	190 00	
1/2 proceeds of play at W. P. drawing room.....	100 00	
Interest on deposits.....	13 50	
Subscription to <i>Zoophilist</i>	4 76	
	603 26	
		\$1648 39

EXPENDITURES.

Paid for postage and wrappers.....	\$164 02	
Rent and clerk hire.....	301 41	
Subscription to <i>Zoophilist</i>	33 43	
Advertising.....	29 50	
Rent of hall for annual meeting.....	12 50	
Paid artist for copying picture.....	20 00	
Printing.....	300 55	
	861 41	
Balance on hand.....		\$786 98

STEPHEN FARRELLY,
Treasurer.

January 28th, 1889.

Audited and found correct.

CAROLINE A. BOGGS,
SAMUEL HINDS THOMAS,
Auditors.

March 26th, 1889.

EXTRACTS FROM
"TWELVE YEARS' TRIAL
OF THE
VIVISECTION ACT.

HAS IT STOPPED THE SCIENTIFIC TORTURE OF ANIMALS IN ENGLAND?"

BY M. R. C. S.

From the last Return presented to the House of Commons relating to Experiments on Living Animals in the year 1887, we find that no less than 82 persons were licensed during that time for performing such experiments. These persons, for the most part, worked at the Universities and the Schools of Medicine attached to our great hospitals. The Inspector states that 1220 experiments were reported to him, but we have the best reasons for believing that he only knows "in part," and so only prophesies "in part." From the medical journals we are often able to credit an experimenter with a great deal more of this work than Mr. Erichsen lays to his charge in his balance-sheet. He is modest, perhaps, and does not wish to be always troubling the Inspector with an account of his doings.

Are all these 1220 experiments that are acknowledged done under anæsthetics, or the pretence of them? By no means. The Report says that "the experiments in which the administration of anæsthetics was dispensed with were 582 in number." "But," it will be replied, "these were only for the most part inoculations, and were, consequently, painless." Certainly the inoculations themselves were not necessarily very painful; but think of the development of the diseases inoculated—anthrax, hydrophobia, eruptive fevers, and the like!

My business just now, however, is not with Mr. Erichsen's Report, but with the published statements of the persons

licensed by the Home Office in this country to perform experiments, and of which they have given their own accounts in the scientific journals.

Most of those who have taken any interest in this controversy, will remember the terrible experiments of Professor Roy on the circulation of the kidney. Divested of technicalities, they consisted in cutting down through the loins of living dogs and dissecting out their kidneys, but without dividing the veins and arteries by which they were connected to the circulatory system. A kidney-shaped metal box was made to fit the kidneys, which were placed in the box and surrounded with warm oil, the organs being then connected with delicate apparatus and recording instruments.

Dr. Roy's horrible invention has been a prolific source of suffering to countless animals. It has been taken up by Drs. Phillips and Bradford who, no longer ago than August, 1887, in the pages of the *Journal of Physiology*, described their experiments with "Roy's renal plethysmograph" "on the circulation and secretion of the kidney, at the laboratory of University College, London." * * *

The object of repeating them at University College was to test the physiological action of various drugs on the kidney secretion, and there has not been, nor is it likely there ever will be, the slightest benefit to suffering humanity from these proceedings, which are merely of abstract scientific interest.

Of course, we are told that all this was done under anæsthetics. But what were they? Curare to keep the animal still, and chloroform enough to swear by, but not enough to endanger the animal's life, and so spoil the difficult investigation. This, let it always be understood, is the method really followed in the laboratory. The foreign experiments which we are so often condemned for quoting could not have inflicted more cruel torment upon mangled creatures than was then borne, and probably is at this moment being endured, by animals in University College, London, where ladies and gentlemen meet every week to discuss the merits

and criticise the works of Shakespeare, Shelley, Browning, Chaucer, and other poets, utterly unconscious of the hellish sufferings being endured by the beautiful creatures of God a few yards from their place of meeting, and under the same roof. These things are done, not in Germany, not in Italy, but in Gower Street, London, by license duly granted by your own Home Secretary!

Then, again, everybody has heard of Ferrier's experiments upon the brains of living monkeys, but everybody does not know that these experiments are being daily repeated in London. * *

Professor Schäfer writing in *Brain* for January, 1888, p. 362, speaks of "the long series of experiments upon the monkey's brain with which he was engaged in conjunction with Mr. Victor Horsley during more than two years." The writer of the paper in *Brain* goes on to say that "he scooped away the entire gyrus angularis of one side, producing thereby a gap in the surface of the brain of considerable depth." He gives a diagram of a monkey's brain, from which he had removed both occipital lobes; the result to the animal being that it suffered from "total and persistent blindness. The animal could only find food by groping and smelling. Brought into a strange place, it ran against every obstacle." * *

This is the kind of work which goes on to-day in London, and at our great university centres, and, as gourmands say that the appetite comes with eating, so must these experiments increase in frequency and cruelty so long as the people of England permit their Government to license men to commit such abominations.

In *THE ZOÖPHILIST* for April 2d, 1888, there is an account of a particularly cruel series of experiments upon rabbits made by Mr. Watson Cheyne, who holds a license to vivisect at King's College, London. He made wounds in the muscles of the backs of rabbits and inserted little thin glass balls, or capsules, filled with that intensely irritating drug known as croton oil. After the wounds had healed over these

capsules, pressure was made above them of sufficient force to break them, and to cause their contents to be dispersed amongst the tissues. There is no pretence of anæsthetics here, yet the long-continued suffering caused by the operation must have been of the most cruel nature. A drop or two of croton oil rubbed into a man's skin will cause a violently irritating eruption to appear. So painful is this irritation that medical men hesitate to prescribe it for their patients, as great dissatisfaction is often caused by what are sometimes deemed such needlessly violent remedies. What must have been the agony these little creatures endured, not alone by the burning drug permeating their delicate internal tissues, but by the particles of broken glass stabbing their nerves and muscles at every moment? * *

We may invite your attention to the lecture delivered at the Royal Institution on Friday, May 29th, 1885, by Mr. J. J. Coleman, "on the Mechanical Production of Cold." This gentleman related what he called the "interesting experiments" of Dr. McKendrick in freezing frogs and rabbits to death. Placed in a cold chamber of 100° *below zero*, in an hour's time, he says, the animal dies!

Never, in the history of this disgrace to educated and civilized humanity have more cruel, prolonged, and useless torments been inflicted than those for which Dr. Rutherford is answerable, at his laboratory in Edinburgh, on the biliary secretion of the dog. * *

Chloroform, ether, and other anæsthetics affect the flow of bile, therefore they could not be used, as they would, of course, have invalidated the experiments on the biliary secretion.

After Edinburgh, perhaps Cambridge University is most deeply implicated in the sin of vivisection. Since the date when the now Professor Roy was appointed to the studentship founded by George Eliot in memory of G. H. Lewes, the experiments have grown in frequency and barbarity, till, as we understand, the makers of instruments for the use of the

experimenters on living animals have found their business a very prosperous and growing concern.

Week after week, and month by month, similar atrocities may be found in the medical and scientific journals. Yet we may be sure the half is not told us. These are only cases where some brilliant results can be told in an essay. Of the thousands of "failures," entailing equal suffering to the animals, but bringing no glory to the operator, we are naturally told nothing.

I have shown how terribly the Act of Parliament, which was intended to prevent scientific cruelty, has failed of its purpose, and that it is possible under its provisions to commit cruelties unsurpassed by those done in foreign countries. It is for the people of England to say how long the Statute Book shall be disgraced by the existence of an Act which permits diabolical doings such as I have described to take place in the centre of the world's civilization and philanthropy.

The following Extract is taken from "Mr. Darwin and the Royal Commission on Vivisection," by STANFORD HARRIS, M.R.C.S., & L.S.A.

It is easier to cope with and put down evil which is practiced for the love of evil, than it is to do so with the deadlier form of wrong which is perpetrated by those who have satisfied their conscience as to their actions and are zealous and upright men. When a thoughtless and brutal collier is seen beating his horse on the roadway, he can be speedily dealt with; far otherwise is the case of the scientific man who, in his zeal for knowledge, and while saying that he has the good of mankind in view, slowly cuts out the nerves of some sentient and conscious animal.

In fact, the history of the ages past surely makes this thing plain, whatever else we may learn from it, that it is no guarantee for justice and mercy being done in any particular matter that the matter in question is entirely in the hands of an otherwise exalted or right-seeking body of men. In the words of Professor Huxley, "No man, nor any body of men, is good enough, or wise enough, to dispense with the tonic of criticism." The words of the late Lord Shaftesbury are equally true, that "No one, whoever he may be, ought to be entrusted with absolute power." This is so true in all matters concerning creatures capable of acute suffering, that it is not wonderful that a recent writer should go so far as to ask whether "civilized man is yet civilized enough to be trusted with the happiness and training and fate of animals."

From The Electrical World, August 11, 1888.

PHYSIOLOGICAL TESTS WITH ELECTRIC CURRENTS.

At the invitation of Mr. Harold P. Brown, a large number of electricians assembled at Columbia College on Monday, July 30th, as noted in these columns last week, in order to witness his experiments on the effects of the electric current on dogs. These experiments consisted first in passing a current through the dog from an Edison "municipal dynamo," which had been provided with a relay to prevent the extra current from reaching the animal upon the opening of the circuit. The resistance of the dog at the start was 15,300 ohms, and, beginning with 300 volts, the pressure was increased to 1000 volts without fatal effects, although the dog suffered somewhat under the higher pressures. The alternating current was then tried, and on the first application with 330 volts the dog was killed, dying without a struggle. Mr. Brown had intended to make experiments with other dogs, but was prevented therefrom by an officer of the Society for the Prevention of Cruelty to Animals.

From The Electrical Review, August 4, 1888.

CURRENT vs. DOG.

Mr. Brown has made his demonstration, and it demonstrated—simply nothing, except that for want of experience in conducting such affairs, much needless cruelty was exhibited. The test was not a test in any sense. The dog was hit with 300 volts continuous current from an Edison machine, again hit with 400 volts, then with 500 volts, and finally given a tremendous thump with 1000 volts. In his struggles at this stage he got nearly strangled by his halter. Then nine-tenths dead, he was given a dose of 330 volts of the alternating current, and, like a sensible beast, gave up the ghost. Such demonstrations (?) as this are worse than useless. Had the order been reversed, and the alternating current been admin-

istered first, it is much more than probable that a final dose of 330 volts continuous current would have been quite as effectual to kill. It was much like pounding a man to jelly with a club, and then changing weapons and finishing him with a merciful bullet.

From The Electrical World, August 11, 1888.

It was not to be expected that Mr. Harold P. Brown, whose letter on the danger of the alternating current had brought out so many answers, and among them several attacks upon his ability, would allow these replies to pass unheeded; and as the result, we have been treated to a series of experiments as to the effects of currents upon dogs. While we believe that much light can be shed on the subject by a systematic series of observations under the various conditions involved, the results thus far obtained, though a very good indication, must be taken with reserve. For there is a point which, it seems, demands consideration in reasoning from the effect of shocks upon dogs to similar shocks upon man. That is, aside from the question of resistance, into the case of man there enters the question of *morale*, which is absent in some animals, and varies considerably in many others. Thus, observation tends to show that the horse and the mule, animals which are naturally timid and nervous, succumb far more easily to current shocks than would have been the case with the dogs recently experimented upon. Hence, as we have remarked, the relatively fatal shock for the lower animals and for man is a question which cannot be decided off-hand.

From The Electrical World, August 11, 1888.

EXPERIMENTS WITH ELECTRIC CURRENTS ON DOGS.

BY HAROLD P. BROWN.

In these experiments the following instruments were employed: * *

First Experiment. Dog No. 1. Old black and tan bitch. * *

Behavior of dog: Howled vigorously and made violent efforts to escape,

showing that it had control of muscles and that nerve functions were not destroyed. Howled loudest as circuit was broken. Continued howling and rushing about for two and a half minutes after circuit was opened, then dropped upon its side.

Second Experiment. Dog No. 2. Large half-bred St. Bernard puppy ; strong and in good condition. * *

Behavior of dog : Howled during time of contact and tried to escape. Easily quieted and entirely uninjured.

Third Experiment. Same dog as second experiment. * *

Behavior of dog : Was made perfectly rigid during time of contact, unable to howl or move until current was broken, then howled and made feeble efforts to escape. Continued whining until third trial. A longer time of contact was decided upon for next trial, since the circuit breaker and alteruator made contact during but a small portion of each revolution.

Fourth Experiment. Same dog and same connections. * *

Behavior of dog : Was turned into rigid mass during contact, no motion or tremor visible ; at opening of circuit it fell with all muscles limp, howled faintly with a single expulsion of breath and died in fifteen seconds after circuit was closed. Muscles remained limp after death, while muscles of first dog were stiffening.

Fifth Experiment. Dog No. 3. Fox terrier bitch. * *

Dog howled and struggled, but unhurt.

Sixth Experiment. Same dog. * *

Dog howled and struggled, but unhurt.

Seventh Experiment. Same dog. * *

Dog howled and struggled, but unhurt.

Eighth Experiment. Same dog. * *

Dog howled and struggled violently for two minutes, then apparently died. Dog immediately dissected by Dr. Frederick Peterson, and heart found still pulsating ; peristaltic action of intestines continued and frequent quiverings of muscular tissue noticed. Heart continued pulsating until 10.50. Opinion expressed by Dr. Peterson that artificial respiration would have saved its life if resorted to immediately after moment of apparent death. Section of spinal cord and sciatic nerve taken out by Dr. Peterson for microscopic examination.

Ninth Experiment. Dog No. 4. Half-bred bull-dog. * *

Dog was placed in wooden box to prevent accident in case he broke loose ; slats were nailed across top of box, but these were unnecessary, as during time of contact the dog was apparently turned to stone. When circuit was opened, it fell in a limp heap and died in fifteen seconds after the circuit was closed.

Tenth Experiment. Dog No. 5. Half-bred shepherd dog ; strong and in good condition. * *

Dog yelped once, but entirely unhurt. Did not struggle. Respiration rose to 120 per minute (panting).

Eleventh Experiment. Same dog. * *

Respiration fell to 72 and dog unhurt. Dog yelped when circuit was closed, but wagged his tail as Dr. Peterson counted respiration.

Twelfth Experiment. Same dog. * *

Dog yelped as circuit was closed, but still unhurt. Respiration 72.

Thirteenth Experiment. Same dog. * *

Dog yelped as circuit was closed, but still unhurt. Respiration 60.

Fourteenth Experiment. Same dog. * *

Dog yelped slightly as circuit was closed, but still unhurt. Respiration 72 (irregular).

Fifteenth Experiment. Same dog. * *

Dog yelped, but unhurt. Respiration 72. Dog removed from box and found to be entirely uninjured. No signs of paralysis in either sensory or motor nerves. To ascertain whether any poor contact existed dog's resistance was retaken. Resistance 6500 ohms. As all experiments upon this dog were with a single, instantaneous closing and short-circuiting of dog circuit, it was decided to replace him in box and hold the relay armature for two seconds after circuit was closed, in order to determine whether current for this length of time would be injurious.

Sixteenth Experiment. Same dog and same connections. * *

Dog yelped and struggled during continuance of current, but entirely unhurt.

Seventeenth Experiment. Dog No. 6. Plain, ordinary dog. * *

Dog screamed and howled loudly during time of closing, and made violent efforts to break loose for about one minute after circuit was opened. Respiration very variable, 54 to 30.

Eighteenth Experiment. Same dog and same connections. * *

Dog silent and motionless during continuance of current; yelped and howled loudly at opening of circuit and made efforts to escape. Respiration 165.

Nineteenth Experiment. Same dog and same connections. * *

Dog silent and motionless during continuance of current. Yelped and howled loudly at opening of circuit, but not as vigorously as before. Continued to struggle to escape. Respiration 170.

Twentieth Experiment. Same dog and same connections. * *

Dog silent and motionless during continuance of current; moaned with one expiration of the breath as circuit was opened and sank in a limp heap. Died in ninety seconds after circuit was closed.

Twenty-first Experiment. Dog No. 7. Yellowish-brown bitch. * *

Dog uttered no sound; no struggling; died almost instantly. No struggles after current was off, beyond muscular twitching.

Twenty-second Experiment. Dog No. 8. Fox-hound. * *

Dog motionless and silent during contact. As soon as circuit was broken all the muscles gradually relaxed, and the dog sank down dead without a struggle.

Twenty-third Experiment. Dog No. 9. Red setter; very large and strong. * *

Dog yelped once during shock, but very slightly; when circuit was opened dropped slowly to bottom of box, howled and struggled. Recovered very slowly and rose in about thirty seconds after circuit was opened.

Twenty-fourth Experiment. Same dog. * *

Dog silent and motionless during contact, but howled and struggled very violently after circuit was opened, succeeding in getting out of box.

Twenty-fifth Experiment. Same dog. * *

Dog silent during shock: howled afterwards, but very weak; evidently severely injured; dropped and did not rise again.

Twenty-sixth Experiment. Same dog. * *

Dog silent when current was on; howled feebly afterward. Dog panting violently and perspiring copiously. Evidently dying, but to put him out of pain it was decided to give higher voltage.

Twenty-seventh Experiment. Same dog. * *

Dog died without noise or struggle.

FOR 1889.

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